# Code 582
Flight Software Branch

**FSW REQUIREMENTS INSPECTION STANDARD**

**Flight Software Branch – Code 582**

**Version 0.9a – 4/24/06**

**582-2004-008**

**Goddard Space Flight Center**

**Greenbelt, Maryland**

National Aeronautics and
Space Administration

## FORWARD AND UPDATE HISTORY

| Version | Date | Description | Affected Pages |
|---|---|---|---|
| 0.9 | 4/24/06 | Krishnan Narayanan: Incorporated inputs from D. Leucht. Section 6 substantially revised and reviewed with Elaine Shell.<br><br>(0.9a version incorporates formatting changes and replaced all occurrences of "inspection review" with "inspection".) | Sections 5.0, 6.1, 6.2 |
| 0.8 | 1/21/06 | Krishnan Narayanan: Incorporated inputs from K. Hawkins, changes to forms in Appendices consistent with Code Inspection walk-through, and conducted a limited FSB internal walk-through. | All |
| 0.7 | 7/28/05 | Revision by John Otranto, based on input from multiple sources, including comments received from FSB personnel regarding requirements inspection. | All |
| 0.6 | 7/15/04 | Final editing based on meeting with Elaine Shell. | All |
| 0.5 | 7/6/04 | Revision by Forrest Shull to include FSB-specific checklist items, based on interviews with FSB personnel. | Section 7.0 |
| 0.4 | 05/27/04 | Revision by Forrest Shull based on feedback from meeting with Mike Tilley & Mike Stark. | 3, 6, 8, 12, 15, 18 |
| 0.3 | 05/05/04 | Revision by Forrest Shull based on feedback from meeting with Elaine Shell, Mike Tilley, and Mike Stark. Added forms modified from those used at JPL. | All |
| 0.2 | 04/12/04 | Revision to draft based on feedback from Mike Tilley | All |
| 0.1 | 03/05/04 | Draft – by Forrest Shull, based on Mark Walters' SDO Code Inspection Guidelines, reformatted to look like a 582 document. | All |

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# 1      INTRODUCTION

This standard describes the Goddard Space Flight Center (GSFC) Code 582 Flight Software Branch (FSB) inspection policies for Flight Software (FSW) requirements.

FSW requirements are inspected as part of the development process.  The inspection's primary objective is to improve the accuracy, clarity, and uniqueness of FSW requirements, ensuring that they correctly describe the intended operation, can be implemented, verified, and validated.  Additional inspection benefits include creating a distributed knowledge about the software requirements throughout the FSW team.  Inspections shall be scheduled to allow sufficient time to make and review requirement changes prior to the start of FSW coding.

The FSW inspection process represents the best practices, confirmed by experience, from References 1, 2, and 3; lessons learned from past successful inspections processes within the FSB; and published experience reports from industrial organizations.  Further, this FSW requirements inspection standard incorporates processes and standards piloted and codified at other NASA Centers; the experiences of NASA project teams have proven these recommendations effective.

# 2      REFERENCES

1.  *ISD Software Policies*, 580-PL-002-02, PAL Number: 1.0.0.1, GSFC Information Systems Division Code 580, dated 4/20/2005.

2.  *Contents of the Software Requirements Review*, 580-CK-005-01, GSFC Information Systems Division Code 580, dated 3/1/2004.

3.  *NASA Software Engineering Requirements*, NASA Headquarters Procedural Requirements NPR 7150.2, NASA Headquarters, Office of the Chief Engineer, dated 9/27/2004.

4.  *Flight Software Requirements Document Template* 582-2005-003, v 0.6 Flight Software Branch, Code 582, dated 09/30/03.

5.  *FSW DCR Requirements*, 582-2005-002, Flight Software Branch, Code 582, Version 1.1, dated 04/15/2005.

6.  *FSW Requirements and Recommendations for Maintainability*, 582-2006-013, Flight Software Branch, Code 582, draft.

# 3      ENTRY CRITERIA

FSW requirements shall be inspected before any mission-unique development is started.  The inspection presents the opportunity for the FSW team to receive feedback that can improve the software requirements while the freedom exists to add, delete, and change requirements.  The requirements inspection may not be the final opportunity to modify the requirements, but it is an important milestone toward requirements CCB approval.

The requirements inspection is intended to provide a formal review of moderately mature requirements sets defined by FSW projects through integration of externally imposed requirements and designs, FSW engineering analysis, internal meetings to identify and scope FSW requirements, evaluation of typical or implied performance, safety, security, testing and maintenance needs, and FSW engineer's experience from previous missions.  The requirements inspection supplements and potentially finalizes, but does not replace, the requirements definition process.

Before being considered ready for inspection, a FSW requirements document (or repository) must meet the following criteria:

A.  The requirements cover all typical execution scenarios, and address conceivable anomalous conditions. There should be a grasp of the FSW development environment, include all relevant functional, performance, interface, safety, security, testing, and operational demands.

B.  The requirements include all relevant, undetermined requirements as "TBD," and all requirements under debate, negotiation, or analysis as "TBR." In these cases, the requirements are specified to define and clarify the uncertainty.

C.  The requirements are reasonably stable.

D.  The requirements reference and conform to all applicable requirements documentation standards such as reference 3.

E.  The requirements document is consistent with the reference 4, *FSW Requirements Document Template* accessible at http://fsw.gsfc.nasa.gov

## 4       INSPECTION MATERIALS AND DISTRIBUTION

The requirements author shall prepare a FSB Requirements Review Package (RRP) for the inspection. This RRP should include all material required for a reviewer to evaluate the requirements without any other external resources. The RRP should provide the following and meet the following criteria:

A.  A summary page, documenting:

1.  The author's name, co-author's name(s), and the schedule review date and time.

2.  The package distribution date.

3.  A summary statement or title for these requirements.

4.  A list of the files/documents to be reviewed.

5.  References and URLs (if available) for applicable requirements standards and templates, including this document. (At least one electronic or hardcopy version of each document shall be available at the inspection meeting for reference.)

6.  References and URLs (if available) for relevant, existing project documentation including other requirement documents, hardware specifications, algorithm documents, and operations concept documents. (At least one electronic or hardcopy of each document shall be available at the inspection meeting for reference.)

B.  A listing of all the requirements under inspection in this review. Attributes shall include complete requirements statement, requirement ID, and traces to other requirements (document referenced in Part A., above). Other requirement attributes may be included as deemed necessary by the specific project.

C.  The RRP should normally be distributed within 3 business days, before the inspection so that the review team members have adequate opportunity to review all the requirements prior to formal inspection.

D.  The RRP should limit the number of requirements for inspection to a set that can be reviewed by the inspection team within a 2-hour time limit.

E.  The review material shall be provided in advance to all reviewers in an electronic format, such as an email attachment, and/or as a downloadable file or set of files at a specific, electronically accessible location. A distribution of a hardcopy of the review material may be used if necessary or as a fallback.

## 5       REQUIRED ATTENDEES/INSPECTION TEAM COMPOSITION

All participants in an inspection shall be able and prepared to contribute to the review. The requirements author conducting the requirements inspection is responsible to invite representatives in the technical roles as defined in this section.

These representatives shall be invited and they or their representatives must be present at the inspection:

A. Author(s): The author of the requirements under inspection.

B. Development Team Lead (DTLs) responsible to implement these requirements, and all DTLs responsible for interfaces to these requirements.

C. At least one development engineer (not including the author) responsible for implementing these requirements or related requirements.

D. Test Team representatives who are responsible for testing the requirements undergoing review.

Representatives from the following categories shall be invited to participate in the inspection, although they may decline without causing the inspection to be rescheduled:

E. The FSW product development lead (PDL).

F. Other development engineers.

G. Hardware system or subsystem engineer(s) from which the requirements are derived from, as deemed necessary.

H. A software quality assurance representative (Code 300).


## 6    INSPECTION PROCESS

The FSW requirements author shall conduct the meeting. The FSW requirements author will begin the meeting by providing a contextual overview, summarizing the FSW requirements, and then stepping through the individual requirement statements, providing an interpretation and explanations as needed to ensure the team understands the requirements' purpose and meaning. At any time, any member of the review team can raise an inquiry, propose an alternate interpretation, or suggest a revision to the statement for improved clarity or precision. If the team cannot reach consensus on a requirement, the team may create an entry on the Inspection Log Form (Appendix A) to be assigned and resolved in the future.

At the conclusion of the meeting, each inspector will ensure that any outstanding questions or concerns are documented on the Requirements Inspection Log Form (Appendix A) maintained by the recorder during the inspection meeting.


### 6.1    ROLES & RESPONSIBILITIES

#### 6.1.1   Author

The FSW requirements author is the author for the inspection. The author shall:

A. Distribute all work products for inspection including providing required reference materials for the overview during the inspection meeting.

B. Provide to the moderator a list of "stakeholder" representatives to be invited to the inspection meeting.

C. Compile the RRP, include any additional reference documents, and send the completed package to participants at least 5 days before the inspection meeting is scheduled.

D. Conduct the requirements inspection process during the meeting.

   1. Provide a brief overview of the requirements set, based on the summary material provided.

   2. Provide a verbatim reading of the requirements text during the meeting, and stepping through the requirements set in a timely manner.

   3. Explain requirements interfaces to other requirements.

E.   Respond to questions about the function, purpose, and organization of the inspected requirements and the associated reference materials.

F.   Modify the inspected requirements to address deficiencies found during the inspection.

G.   Distribute the corrections to, and discuss the corrections with the moderator according to the requirements in 0.

### 6.1.2   Moderator

The moderator oversees the inspection and is responsible for the overall effectiveness of the inspection. The role of moderator is performed by a person other than the author, and is typically the author's DTL. (The DTL may designate a willing, qualified inspection moderator if not personally available to serve as the moderator.)  The moderator is responsible for:

A.   Select the requirements set to undergo inspection and assign an ID number and Title to the Requirements Inspection.

B.   Ensure that the requirements meet the entry criteria specified in 0.

C.   Schedule the inspection meeting (limit to two hours).

D.   Make sure that a meeting room and any necessary facilities (e.g. projector, laptop connection) are reserved for the inspection meeting.

E.   Invite "stakeholder" representatives to the inspection meeting.  The inspection must be rescheduled if any of the 'required' personnel cannot be represented in the inspection. Invite any additional participants who can contribute to and/or learn from the inspection.  Familiarize these attendees with the efficiency issues documented in Section 0 and decorum issues documented in 0.

F.   Prepare for the inspection in the same way as every other inspector.

G.   Initiate the Requirements Inspection Log Form (Appendix A) with known information for use during the inspection meeting.

H.   Decide whether inspectors have done the preparation work and the meeting can proceed.  The moderator shall cancel the meeting if inspectors are inadequately prepared.

I.   Make sure that other inspectors report their attendance preparation time (required per reference 3) on the Requirements Inspection Participants Form, Appendix A.

J.   Initiate the meeting, regarding the meeting's purpose, scope, time limit, and decorum.  Set the pace for the meeting.  Introduce people and their project roles, if appropriate.  Ensure attendance of every required participant.

K.   Be prepared to discuss issues raised by other participants in a fair way and reach a decision as to whether or not a change is necessary.

L.   Ensure that the meeting stays focused on raising and discussing any possible quality or technical issues in the document under inspection.

M.   Classify any changes identified during the meeting according to requirements in reference 5, *FSW DCR Requirements*.

N.   Summarizes which new issues were identified and to whom they were assigned at the end of the inspection.

O.   Discuss with the author at the conclusion of the meeting the estimated rework time for the changes necessary and propose a date when the changes will be done.

P.   Present the completed list of changes and issues to the author and cc: the other inspection participants within 2 days after the end of the inspection.  Assign issues and corrections to the author or co-authors.

Q.   Perform follow-up as described in 0.

R.  Verify that all dispositioned changes and issues are corrected prior to re-inspecting and verify that no new changes or inconsistencies are inserted into the requirements.

S.  Ensure traces to other requirements are still valid and analyze the modification for new traces. Include these new traces as part of the requirements change.

T.  Generate and file the final inspection report specified in Appendix A, Requirements Inspection Log Form.

1.  Summarize on the Requirements Inspection Participants Form (Appendix A) the total time spent by participants on preparation.

2.  Ensure the changed requirements are placed under CM control.

### 6.1.3 Recorder

An attendee other than the author is assigned as the recorder. The recorder will document each change with classification identified during the inspection meeting and provide the resulting list to the moderator at the end of the inspection meeting. The recorder shall:

A.  Ensure the necessary form(s) are available in hardcopy at the meeting, and that sufficient materials are available to attendees to document their inputs.

B.  Ensure all participants complete an entry on the Requirements Inspection Participants Sheet as shown in Appendix A.

C.  Record any issues that the team consensus determines requires a change to the requirements.

D.  Record any issue that cannot be resolved at the time of the meeting along with a name responsible for addressing the issue.

E.  Log the total time spent at the meeting.

### 6.1.4 Inspectors

Additional personnel not fulfilling the roles of author or moderator are inspectors and are chosen from the candidates listed below.

**Peers –** persons working on FSW but not directly responsible for generating the inspected product. These persons may be working on the same FSW mission or a different mission.

**Interfacing Peers** – representatives from interfacing components and heritage components will inspect these FSW requirements from the perspective of using or working with the FSW.

**Testers** – persons responsible for testing FSW. Testers look for issues in the FSW requirements from the perspective of their areas of expertise, making certain the resulting FSW is testable.

**Users** – persons such as flight hardware developers, flight operations personnel, science data processing, and science data analysts can be candidates, based on the relevance of FSW requirements to these roles.

The inspectors shall:

A.  Prepare adequately by taking time to review the requirements undergoing inspection and noting any potential quality issues.

B.  Take notes on issues to raise during the inspection meeting for team discussion.

C.  Participate in the inspection meeting. Raise any issues that they found during preparation, or that occur to them during the inspection meeting, that they feel require a fix or change to the requirements.

D.  Be prepared to discuss issues raised by other participants.

E. Remain focused and professional at all times and never behave in a disrespectful manner toward their colleagues during the inspection.


## 6.2 INSPECTION TEAM EXAMINATION

Each member of the inspection team (moderator, recorder, and inspectors) should look for errors in logic, requirements that may have a negative impact on performance, and omission of necessary functions and comments. Further, the team should identify deviations from requirements standards and approved waivers.

### 6.2.1 Inspectors from a Development or Testing Background

Inspectors representing a **development perspective (author, peers, and moderator)** should review the RRP while considering how they would design and implement the functionality described. Inspectors should look for errors in logic, requirements that unnecessarily impact performance, requirements omission, redundancy, overlaps, and requirements conflicts. During the inspection process, inspectors should record any issues they find.

Inspectors representing a **testing perspective (test team leads or test engineers)** should consider, for each requirement, how they would develop a test case or set of test cases to evaluate the software implementation of these requirements. While doing so, they should record any issues they find, although they should especially focus on the following questions:

Questions that these inspectors can pose shall include:

A. Is the requirement clear, concise, and understandable by all reviewers?


1. Are the requirements unambiguous? For example:
   - A requirement stating, "the buffer should be large enough to hold all of the data" is not useful without a specification of either the data items or the maximum data size.

B. Is this requirement really one discrete requirement, or should it be broken up? (Compound requirements should be avoided – each requirement shall be traceable on its own. Often, compound requirements can be identified by multiple 'shall' in the statements. These can usually be expressed as one or more child requirements without impacting readability.)

C. Is each requirement or requirement section clearly traced to the high-level requirements in related documents such as the Mission Requirements Document (MRD), instrument requirements, and Interface Requirements Documents (IRDs)? (Note: These high-level documents may not be generated or finalized at the time of the FSW requirements inspection.)

D. Are there over-specified design details? Does the requirement statement imply a design approach and, if so, is a more generic, design-independent statement possible?

   1. Does the requirement mention system components that are below the level of (more detailed than) the current reference architecture?

   2. Is an updatable parameter database defined to store and retrieve values (except in cases of FSW resource characterization or FSW performance criteria)?

E. Is the requirement well formed for FSW? Specifically:

   1. Is this requirement more appropriate as part of the algorithms specification or an IRD?

   2. Are units of measure and limits specified for all values?

   3. Are the validation requirements for all identified commands specified?

   4. Does the requirement avoid specifying design requirements, unless necessary?

 5. Is the word 'shall' used as the imperative?

 6. Is each requirement uniquely numbered?

F. Are requirements for command handling, management, and response sufficient?  Do the requirements reference a command definition resource (document, database, etc.)?  If commands are defined in the requirements undergoing inspection, is the command's functionality described clearly and unambiguously?

G. Are likely maintenance needs included in the requirements?

 1. For data values that are likely to be updated from the ground does the requirement refer to "database specified value?"

 2. Do the maintenance requirements meet the specifications detailed in reference 6, *FSW Requirements for Maintainability*?

H. Are event message requirements adequate to monitor the progress and successful completion of critical functionality?

 1. Is the software functionality for all asynchronous event messages defined?

 2. Are event messages logically precise and unique, or are there distinctions that might require several different event messages?

 3. Does the asynchronous event message requirement specify message detail (and retransmission frequency)?

 4. Does each event message verify a unique condition?

 5. Are event messages required for every critical condition?

I. Are the requirements complete and clear enough to support design and development?

 1. Is there undescribed functionality that the software will need to perform?

 2. Is there enough detail in the requirement?

 3. Are all TBD and TBR and their resolution dates identified?

 4. Does the requirements document conform to the document template, reference 6?

 5. Are the requirements well organized?

J. Are the system needs implied by the requirements consistent with the known, available resources, and margins (e.g. CPU, memory, bus utilization)?

 1. Have system needs been calculated?

 2. Do sufficient margins exist in these capacities for additional requirements, and imprecision?

K. Are comments with the requirements (notes) used appropriately?

 1. Are comments clearly differentiated from the actual requirements?

 2. Does the annotation really contribute additional, useful information?  (Not all requirements are sufficiently complex to merit annotations.)

 3. Are there requirements without notes that require additional explanation?

 4. Do the notes contain only explanatory text, not additional functional requirements?

 5. Are the justifications contained in the annotations logical?

 6. If supporting diagrams are used, (e.g., state transition diagrams representing control modes), do these diagrams appropriately clarify complex requirements?  Are the diagrams consistent with the description in the textual requirements?

L. If requirements are reused from another mission, is the reused functionality actually required?

1. Do reused requirements trace to the new mission high-level requirements?

2. Are there hardware differences between the legacy mission and the new mission that may preclude some requirements reuse?

3. Do reused requirements meet current requirement standards?

M. Is the requirement verifiable?

1. Is the requirement specific enough to test?

2. Can a test case be developed to exercise the functionality? Alternately, can another strategy (e.g. analysis, inspection) be used to verify the requirement?

3. Is the requirement stated as a positive assertion, that is, what the system shall do (rather than shall not do)? For example, "The software shall not re-initialize data after a warm restart" is not testable. This requirement could be rephrased as, "The software shall preserve data after a warm restart."

4. Can the results of the test case be captured in sufficient detail to prove the requirement is met?

N. Are error situations described sufficiently and completely?

1. Do the requirements define which types of anomalies generate asynchronous event messages?

2. Are all the software responses for handling all error conditions specified, even if the response is limited to "TBD" or "TBR" or "notify the failure handling mechanism?"

O. Other considerations, as applicable:

1. Does a requirement for a command counter exist, if appropriate?

2. Are there requirements for command checking, errors detection, and corresponding event message generation and transmission?

3. Do the requirements specify an appropriate, reliable source for startup parameters?

4. Do the housekeeping telemetry requirements support lifecycle-monitoring operations, i.e., do they provide visibility into the system for on-orbit testing and troubleshooting?

5. Are integration and test-related telemetry requirements defined and included?

6. Is there a requirement to provide a NOOP command, and reset-counters command?

## 6.2.2   Inspectors from Other Engineering Disciplines

Inspectors knowledgeable in hardware, product interfaces, algorithms, GNC, and science applications should focus on understanding the FSW requirements described as a whole and in the context of their specialty. While focusing on those areas, these engineers should record any issues they find, and focus on the following questions:

A. Do the requirements correctly reflect an understanding of the hardware and software systems?

B. Do the requirements identify and correctly describe or reflect an understanding of all external interfaces?

C. Do the software requirements properly flow from the mission requirements, or from the operations concept guide?

D. Has the flight software team properly interpreted the intent all interfaces? That is:

1. Are the flight software requirements correct with respect to data usage?

2. Are the flight software requirements correct with respect to the interfacing functionality, e.g. the correct algorithms are being applied for the processing required?

E. Does the external systems/hardware imply any requirements for the software concerning telemetry, error handling, or maintainability? Are there corresponding requirements to these external system/hardware requirements?

F. Are all assumptions made by these requirements regarding hardware or interfacing systems accurate?

G. Will the software meeting these requirements provide sufficient functionality from the point of view of the scientists, operations staff, or other end users of the mission?

H. Do the FSW requirements correctly define or reference required processing algorithms?

## 6.3 INSPECTION MEETING EFFICIENCY

One of the important success criteria for an inspection program is to have well-run meetings to use inspection time efficiently.

A. Ensure attendance of every required participant. Team size in any case should typically not be less than four. *Large teams will greatly diminish productivity.* Reviews with more than seven attendees must be well-managed (comment– and conversation–constrained) to ensure meeting efficiency and timeliness.

B. The **moderator** reviews the objectives of the inspection as described in Section 1.0 – this helps make sure all participants are "on the same page" and focused on the quality goals. It helps to remind participants why the requirements are undergoing inspection – if the rules dictate that everything is inspected, if the requirements area is particularly complex or important, or if this is a re-inspection in response to changes made to requirements.

C. When presenting the requirements, the **author** describes the connections between the requirements under inspection and any previous system artifacts (including higher-level requirements, design, and heritage code) that are relevant.

D. When presenting the requirements the **author** should have a prepared explanation of the requirements meaning.

E. **Inspectors** should focus solely on improving on the requirements at hand, and not discuss tangential issues. Avoid stalling the meeting for a discussion of specific technical matters that will not affect the requirements or that cannot be resolved in the meeting. Detailed conversations shall be conducted offline or documented as an issue to be resolved later.

F. Although **inspectors** can propose improvements to requirements (better/easier ways of phrasing the requirements), the meeting should focus on finding problems with the requirements, and drafting statements that are clear, unambiguous, and convey the same meaning to all attendees. Allow the author to complete and fine-turn the correction offline. Avoid unnecessary wordsmithing.

G. To the extent possible, **inspectors** should bring any relevant standards and reference documents to help resolve issues that could come up – resolving these issues during the meeting is preferable to assigning them for later resolution. The RRP indicates the documentation the author shall provide at the meeting. Other needed documentation is the responsibility of the inspector.

H. Last-minute **inspector** substitutions shall be avoided.

I. At the end of the meeting, the **moderator** summarizes which new issues were generated and to whom they were assigned. The moderator ensures that an electronic version of Requirements Inspection Log Form is emailed out after the meeting.

## 6.4 HERITAGE/REUSED SOFTWARE REQUIREMENTS INSPECTION

Prior to the requirements inspection, the DTL may determine if some existing FSW code qualifies as heritage code (acquired from a previous development effort and usable for this development effort with very few or no changes.) Assuming that code is heritage, it is especially important at the requirements

level that assumptions made about reused functionality and integration with new code and code from other sources are rigorously reviewed. The requirements inspection effort shall include, at a minimum:

A. Review of interfaces requirements of the heritage FSW to other FSW components

B. Review by a person who has experience with the heritage code.

An analysis of the heritage code's compatible with the planned development environment, including planned hardware and compilers shall be performed and presented with these requirements.

## 7     DECORUM

It is the responsibility of the moderator to maintain the decorum and focus of the inspection meeting.

It is important that the FSW requirements inspection remain a professional environment during which common courtesy and personal regard govern the identification of needed changes. The inspectors should focus on the stated functional, interface, and performance requirements, and their compliance with stated architecture and development practices. It is reasonable to point to style, syntax, and semantics that provide ready and apparent gains in clarity, usability, and completeness. Inspectors can state these factors, like all others, in a tactful and respectful manner. Disrespectful approaches do not engender continued teamwork and should not be tolerated.

This inspection shall not be refocused from its stated purpose and format to accommodate inexperienced staff attending for training value.

## 8     FOLLOW UP

The recorder will provide the compiled list of necessary changes to the author and moderator; the moderator for the requirements under inspection will review the list, ensure that the author makes the agreed-to changes, quality assures the changes, and distributes the revisions to the inspection team within 2 days following the inspection. The author and the moderator record these changes into the requirements configuration management (CM) system as appropriate for the project, consistent with the project's CM procedures.

Although the inspection participants' duties end with the inspection meeting and the completion of the Requirements Inspection Log Form in Appendix A, they should be informed of follow up activities (and completing those activities in a timely manner) as a way to increase inspection effectiveness and ensure participant motivation.

**APPENDIX A: INSPECTION LOG AND PARTICIPANTS FORMS**

**FSW Requirements Inspection Log Form**

| Field | Entry |
|---|---|
| Requirements Inspection: | |
| Iteration #: | |
| Date & Time: | |
| Author: | |

| Total Requirements Inspection Entries | 0 | *Automatically counts the number of activity descriptions.* |
|---|---|---|

| Number | Entry Description | Entry Type | Severity | Corrective Action/Resolutions | Actionee | Current Status | Due Date | Closure Date |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
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| 37 | | | | | | | | |

| | Totals | Entry Type | Entry Type Definitions |
|---|---|---|---|
| **Total Entries by Type** | 0 | Add | Include this new requirement. |
| | 0 | Delete | Remove this requirement. |
| | 0 | Restatement | Change in the requirements statement to make the meaning clear, unambiguous, and universally understood. |
| | 0 | Editorial Change | Minor modification to requirement statement to correct grammar, typos, etc. |
| | 0 | Data | Alteration to data supportting the requirement, such as requirement traceability, numbering, categorization, etc. |
| | 0 | Comment | Requirement is unchanged, but an observation or suggestion is offered. |
| | 0 | Other | Change does not fit into categories currently listed. |

| | Totals | Severity Type | Severity Type Definition |
|---|---|---|---|
| **Total Entries by Severity*** | 0 | Open Issue | *Severity of action is unknown, or unresolved.* |
| | 0 | Minor | *Activity issue causes little impact, or a simple workaround exists.* |
| | 0 | Medium | *Activity addresses an issue of moderate importance and resolution is required.* |
| | 0 | High | *Activity addresses an issue requiring immediate focus & resolution. Potentially impacts other efforts.* |
| | 0 | Critical | *AI requires all other activities to cease until it is resolved.* |

*\* It may be that severity is used only if the requirements undergoing inspection are being used to support development.*

Figure A-1          FSW Requirements Inspection Log Form

**Explanation of fields on the FSW Requirements Inspection Log Form**

Note: This form is available as an MS Excel spreadsheet.  The controlled copy of this form is located on-line at *http://fsw.gsfc.nasa.gov/internal/StandardsCCB*.

- **Requirements Inspection:**  General description of the requirements being subject to inspection, using a descriptive name for the group; related subsystem or component name can be used.  Include mission name and inspection version, if multiple inspections of the same material are conducted.

- **Iteration #:**  Build or delivery number for the subsystem or component, if applicable.

- **Date and Time:**  The scheduled date and time for the start of the inspection.

- **Author:**  The person responsible for drafting these requirements, and for ensuring the consolidation of changes to these requirements.

- **Total Requirement Inspection Entries:**  The total number of entries on the form.  (Automatically computed on the spreadsheet version, based on the number of Entry Description fields that are non-blank.)

- **Number:**  Consecutive numbers for entries on this form.

- **Entry Description:**  Text description of requirements issues including, errors, potential for misinterpretation, missing information and any other concerns.  Individual inspectors have flexibility when stating these descriptions prior to the inspection meeting.  When a moderator completes this form during or after the inspection meeting, the issue should be expressed as a clear problem statement that can be addressed by one or more specific actions.

  Optionally, the entry form can provide a single entry referencing an attached hardcopy or file of the requirement subject to inspection, manually or electronically marked-up with changes agreed-to during the inspection.  It is the responsibility of the author to produce this markup and to achieve consensus on these changes.

- **Entry Type:**  Entry Types are enumerated and described on the bottom portion of the form.  Possible types: Add, Delete, Restatement, Editorial Change, Data, Comment, or Other.  (A pull-down list on the spreadsheet version.)

- **Severity:**  If applicable.  Severity Types are enumerated and described on the form itself.  Possible types: Open issue, Minor, Medium, High, or Critical.  (A pull-down list on the spreadsheet version.)

- **Corrective Action/Resolutions:**  Description of the issue's status and/or resolution.

- **Actionee:**  The person assigned to resolve the issue.

- **Current Status:**  If needed, the basic disposition of the issue.

- **Due Date:**  The date on which closure is anticipated or needed.

- **Closure Date:**  The date of the actual closure of the issue.

## FSW Requirements Inspection Participants

| Field | Entry | Inspection Guide |
|---|---|---|
| Requirements Inspection: | | *Title and version number of the requirements inspection.* |
| Iteration #: | | *Build or delivery number associated with the inspection.* |
| Product Size (# of reqs): | | *Number of requirements or pages of requirements* |
| Date & Time: | | *Date & Time of the requirements inspection.* |
| Author: | | *Person responsible for requirements and changes.* |
| Inspection Duration: | 0 | **Minutes.** *Inspection meeting duration time* |

| | No. | Name | Prep Time (mins) | Role/Stakeholder Description |
|---|---|---|---|---|
| **Required Inspection/ Stakeholders** | 1 | | | |
| | 2 | | | |
| | 3 | | | |
| | 4 | | | |

*List the FSW team members mandated to both inspect these requirements and attend the inspection meeting.*

| | No. | Name | Prep Time (mins) | Role/Representative Description |
|---|---|---|---|---|
| **Inspectors** | 1 | | | |
| | 2 | | | |
| | 3 | | | |
| | 4 | | | |
| | 5 | | | |
| | 6 | | | |
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| | 12 | | | |
| | 13 | | | |
| | 14 | | | |
| | 15 | | | |
| | 16 | | | |
| | 17 | | | |
| | 18 | | | |
| | 19 | | | |

*List the FSW team members assigned to inspect these requirements.*

| | No. of Inspectors | Prep Time | Inspection Effort *(Prep and Meeting Time (all attendees))* |
|---|---|---|---|
| **Totals** | 0 | 0 mins. | 0 minute(s) |

| Item | Value | Guide |
|---|---|---|
| **Rework Time:** | | *Time spent by the author/designatee(s) to complete required corrective actions cited during the inspection.* |

Figure A-2      FSW Requirements Inspection Participants Form

**Explanation of fields on the Requirements Inspection Participants Sheet**
*Note: This form is available as an MS Excel spreadsheet.  The controlled copy of this form is located on-line at http://fsw.gsfc.nasa.gov/internal/StandardsCCB.*

- **Requirements Inspection:**  General description of the requirements being subject to inspection, using a descriptive name for the group; related subsystem or component name can be used.  Include mission name and inspection version, if multiple inspections of the same material are conducted.

- **Iteration #:**  Build or delivery number for the subsystem or component, if applicable.

- **Product Size (# of reqs):**  The total number of requirements being subject to inspection during this session.

- **Date and Time:**  The scheduled date and time for the start of the inspection meeting.

- **Author:**  The person responsible for drafting these requirements, and for ensuring the consolidation of changes to these requirements.

- **Inspection Duration (minutes):**  The amount of time taken to conduct this inspection session, in minutes.  Fill in at the completion of the meeting.

- **Number:**  Consecutively numbered stakeholders or inspectors in attendance at the meeting.

- **Name:**  The first and last name of each attendee at the inspection meeting.

- **Prep Time (minutes):**  The total amount of time each attendee spent inspecting the requirements prior to the inspection meeting.  Each inspector should track his or her own time, and report it at the beginning of the meeting.

- **Role/Stakeholder/Representative Description:**  List the principal area that the stakeholder or representative represents.  Principal areas are: management, development, testing, QA, IV&V, and requirements, but other entries are allowable.

- **Totals – No. of Reviewers:**  The total number of people attending the review, not including the author.  (This field is automatically computed on the spreadsheet version, based on the number of non-blank role/stakeholder/representative name fields.)

- **Totals – Prep Time:**  The total amount of preparation time expended by the reviewers, based on the entries on the worksheet.  (This field is automatically computed on the spreadsheet version, based on the total preparation time entered by in the role/stakeholder/representative areas.)

- **Totals – Review Effort.**  The total amount of effort spent reviewing these requirements.  Includes all the individual reviewers preparation time, plus the time for the review multiplied by the total number of attendees, including the author and the reviewers.  (This field is automatically computed on the spreadsheet based on the total prep time and the total time spent in the inspection meeting and number of attendees.)